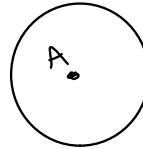


# Ch 10 Circles

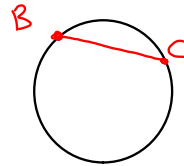
## 10-1 Circles and Circumference 10-2 Angles and Arcs



Circle--the set of all points in a plane equidistant from a given point

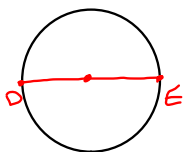
Center--given point

$\odot A$  "circle A"



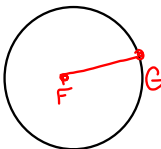
Chord--segment whose endpoints are on the circle

$\overline{BC}$



Diameter--chord that passes through the center

$\overline{DE}$

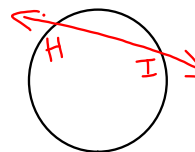


Radius--segment whose endpoints are the center and a point on the circle

$\overline{FG}$

$$r = \frac{1}{2}d$$

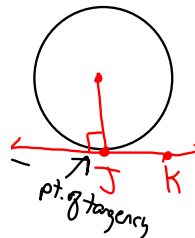
$$d = 2r$$



Secant--line that contains a chord

$\overleftrightarrow{HI}$  is a secant

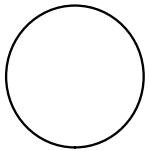
$\overline{HI}$  is a chord



Tangent--line that intersects the circle in exactly one point

$\overleftrightarrow{JK}$  is a tangent

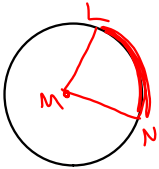
pt. of tangency



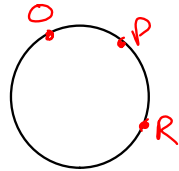
Circumference--distance around

$$C = 2\pi r$$

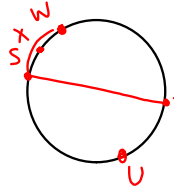
$$C = \pi \cdot d$$



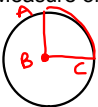
Central Angle--Angle whose vertex is the center and whose sides are radii.

 $\angle LMN$ Central angle intercepts an arc. $\angle LMN$  intercepts  $\widehat{LN}$ 

Arc--part of the circle

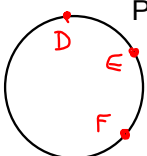
 $\widehat{OP}$   $\widehat{PR}$   $\widehat{OR}$ Minor Arc--  $< 180^\circ$  2 lettersMajor Arc--  $> 180^\circ$  3 lettersSemicircle--  $180^\circ$  named w/ 3 letters

Measure of the central angle = measure of the intercepted arc



$$m\angle ABC = m\widehat{AC}$$

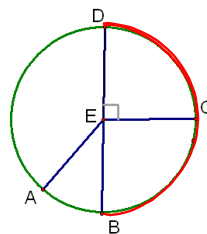
Theorem 10.1--In the same or congruent circles, 2 arcs are congruent iff their central angles are congruent



Postulate 10.1--Arc Addition Postulate-

$$m\widehat{DE} + m\widehat{EF} = m\widehat{DF}$$

### Arc length



$$l = \frac{\text{Angle}}{360} \cdot C_{\text{circumference}}$$

DB is the diameter  
DB = 10

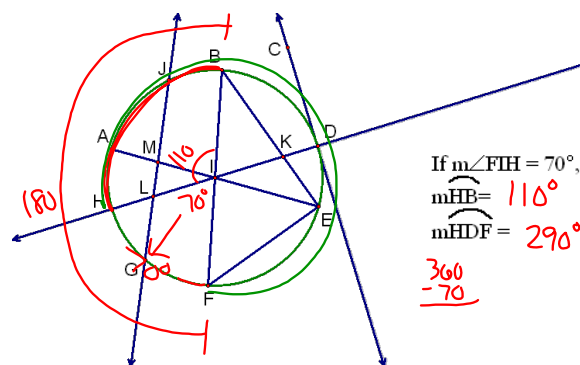
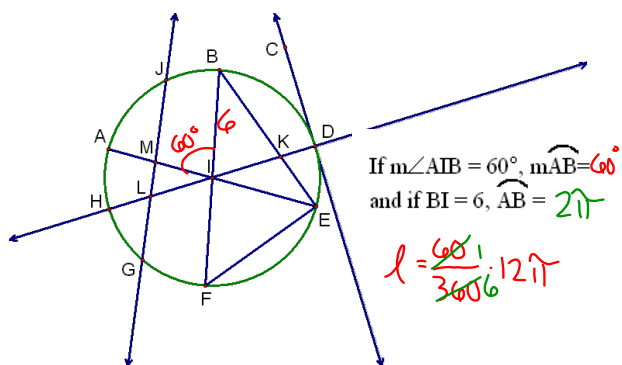
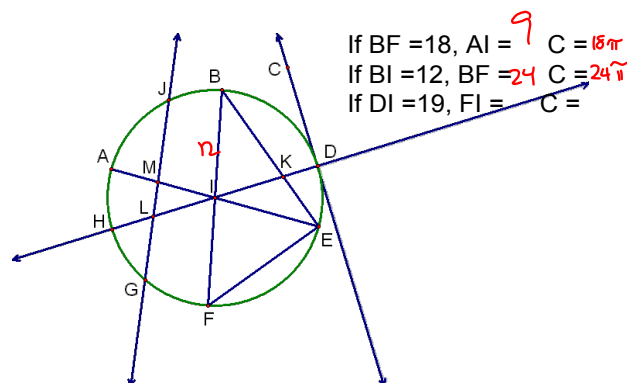
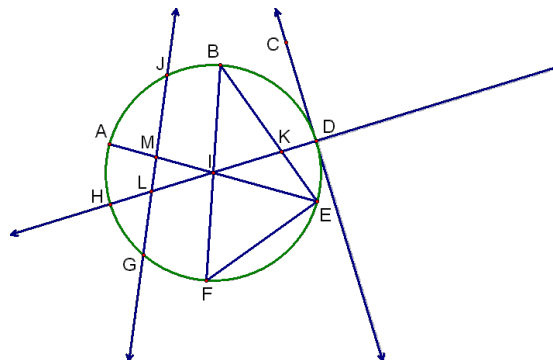
$$C = \pi d$$

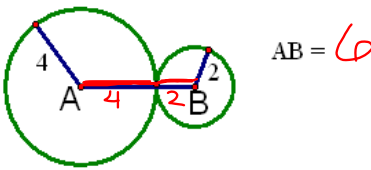
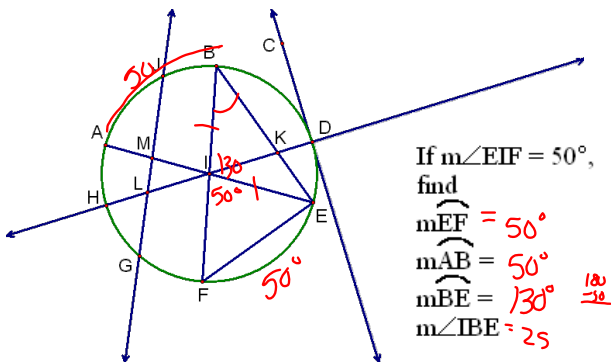
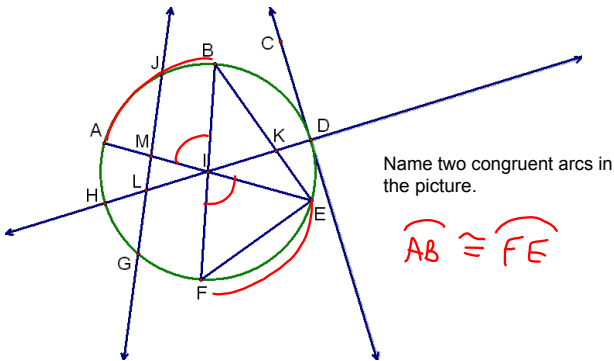
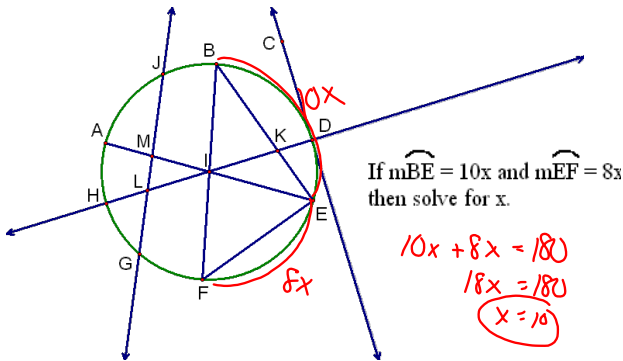
$$2\pi r$$

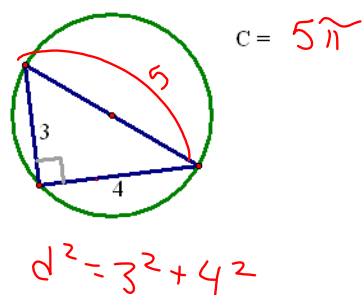
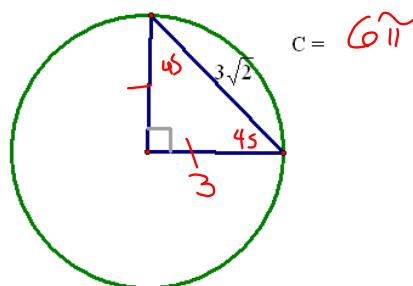
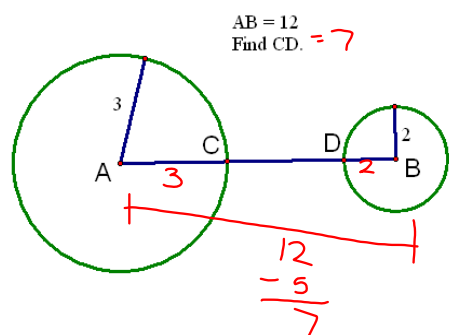
$$C = 10\pi$$

$$\widehat{DC} = \frac{90}{360} \cdot 10\pi = 2.5\pi$$

$$\widehat{DCB} = \frac{180}{360} \cdot 10\pi = 5\pi$$



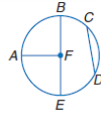




HW  
p526-527  
16-20, 32-37, 52-54  
p533  
14-23, 32-42

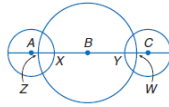
For Exercises 16–20, refer to the circle at the right.

16. Name the circle.
17. Name a radius.
18. Name a chord.
19. Name a diameter.
20. Name a radius not contained in a diameter.



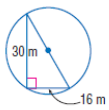
The diameters of  $\odot A$ ,  $\odot B$ , and  $\odot C$  are 10, 30, and 10 units, respectively. Find each measure if  $\overline{AZ} \cong \overline{CW}$  and  $CW = 2$ .

32.  $AZ$
33.  $ZX$
34.  $BX$
35.  $BY$
36.  $YW$
37.  $AC$



Find the exact circumference of each circle.

52.



53.

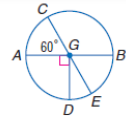


54.



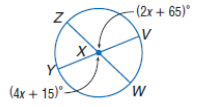
Find each measure.

14.  $m\angle CGB$
15.  $m\angle BGE$
16.  $m\angle AGD$
17.  $m\angle DGE$
18.  $m\angle CGD$
19.  $m\angle AGE$



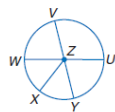
**ALGEBRA** Find each measure.

20.  $m\angle ZXV$
21.  $m\angle YXW$
22.  $m\angle ZXY$
23.  $m\angle VZW$



**ALGEBRA** In  $\odot Z$ ,  $\angle WZX \cong \angle XZY$ ,  $m\angle VZU = 4x$ ,  $m\angle UZY = 2x + 24$ , and  $\overline{VY}$  and  $\overline{WU}$  are diameters. Find each measure.

32.  $m\widehat{UY}$
33.  $m\widehat{WV}$
34.  $m\widehat{WX}$
35.  $m\widehat{XY}$
36.  $m\widehat{WUY}$
37.  $m\widehat{VZW}$
38.  $m\widehat{XVY}$
39.  $m\widehat{WUX}$



The diameter of  $\odot C$  is 32 units long. Find the length of each arc for the given angle measure.

40.  $\widehat{DE}$  if  $m\angle DCE = 100$
41.  $\widehat{DHE}$  if  $m\angle DCE = 90$
42.  $\widehat{HDF}$  if  $m\angle HCF = 125$

